



APPLYING ENGINEERING PROCESS IN EDUCATION SYSTEM IN ORDER TO ACHIEVE TECHNOLOGICAL ADVANTAGES AND TO MAKE EDUCATION PROCESS INTERESTING, INTERACTIVE AND CREATIVE

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ABSTRACT

An Education process is an evolving process from time to time to increase the curiosity to learn something new. Today with the technological enhancement, availability of various learning tools and possibility of practical implementation of theoretical concepts, the education process has become better, interesting and burden-less which adds values to the quality education. Today remarkable amount of technology solutions, equipments and wide varieties of resources are available for purifying knowledge, building career, quick learning of new concepts, scope of implementation of new ideas and experimenting them and to produce high quality full fledged students that can be employed immediately in their respective fields. The goal of this research paper is to have an immense impact of latest technologies including mobile, computing power and utilization of various tools and techniques in education field and comparing it with an engineering process.

KEYWORDS: Technology, Education, Computer, Engineering Process, Statistic and Research, Visualization Comparison and Outcome, Education Analysis.

I. INTRODUCTION

The good educational system requires number of faces to be considered for smoothly execution of education process. Education process involves learning, teaching, testing and evaluating the progress. To meet the prime goals of learning and development, this process should be easy and simple, interesting that attracts learner to learn and knowledge gaining so that as the outcome it produces skilled students who are knowledgeable, open minded, capable of solving any real world problem very quickly and efficiently with hard and smart working nature. Employment market really requires such students and seeks for their needs but due to many other parameters all students are not be able to meet the industry standards and requirements. This arises many questions like where the students are facing problems?, what are the major reasons behind failure and why all the students are not be able to fulfill industry requirements after obtaining the same degree and same curricular course? Hard working is one of the important factors with major impact but some other criteria may also exist.

In this research paper researcher has tried to add tools and techniques in the direction of improvement in the learning process and increasing interest so that by applying little efforts vast knowledge can be achieved. Education process can be engineered similar to classical engineering. This will lead all kind of research to an unpredictable success. All major former inventions and research were made when there was little technology available and changed the view of the entire world. Today technology is reached at peak point and any information can be obtained within few seconds using a finger tip. If it is used properly what can be achieved is unimaginable.

In this paper an effort is being applied to potentially utilize technology and making education as an engineering process. A product is resulted as raw material and ingredients passing through various processes. Technology helps this process to produce quick, efficient and powerful products. Technology should motivate learning and make research and development interesting.

II. VISUALIZATION APPLICATION

Visualization makes any problem and its solution directly visible. It helps learning and understanding any complex concept in simplified form. Visualization and imagination makes learning interesting and easy to remember.

- A well known quote "A picture is worth a thousand words"[1] is also applied to learning process. Dr. Albert Einstein quoted "Imagination is more important than knowledge"[2] which implies its importance.
- Computer software implementation provides visualization possible.
- Use of models, diagrams, graphs, charts, pictures, short video, multimedia systems, presentation all make enjoyable learning.
- Imagination plays a vital role in absent of visualization implementation.
- Theoretical concepts can be grasped better by practical implementation and demonstrative models. Simulation is such a model of real world system.

Thus adoption of visualization adds values in a learning process.

III. COMPUTER AS A TOOL

The fast growing technology since last few decades is the information technology due to the power of computerization. The 21st century is of computer technology because of its involvement in almost every kind of field in the world. Knowledge of computer is required mandatory and that's why it is spanned from primary to research education.

Computers loaded with multimedia system have changed education scenario. To get any kind of information requires few clicks which is time saving compared to past time. Computers have made learning interesting and opened various spaces for research and development. It is required to utilize computing power positively.

Following listing highlights computer utilization for education enhancement.

- Visualization can be implemented using simulation where actual implementation is difficult and costly. Today working models of many real systems are available in form of softwares that demonstrate the working mechanism of that system.
- Presentation software has simplified the teaching, learning and remembering process.
- Computer is a powerful tool to understand core science and engineering subjects. Physics law, chemical reaction, biological processing, mathematical problem solving and medical understanding can be achieved through computers which increase the level of confidence and treated as a skill builder.
- Many statistical softwares are used as an analytical research tools but the actual process and calculation must be known. Thus computer is just an added tool.
- Computers are useful for communication and knowledge sharing of aspects.
- Computers plays a role of learn with fun.
- Faculty development and refinement can be achieved through computer literacy.[5]
- Education process can be simplified and enjoyment but it is not the replacement of classical pattern of black board.

Thus computer is treated as a mediator between teacher and student for simplifying a flow of knowledge.

IV. USE OF LATEST TECHNOLOGY

Technology is ever growing and the question is how to fully utilize it. Following technological aspects enhance learning activity.

- Internet has made availability of any kind of knowledge, concept and information for any research area.[10]
- Use of smart boards, projectors and laptops improves educational process far better but fully depending on them in class room results in degradation.

- C. E-learning is now a days becoming popular to learn from anywhere anytime. Live video lectures and television broadcasting has made it possible to spread knowledge everywhere[5].
- D. Use of smart mobile phones and tablets if utilised properly with educational applications it can be awarded as a learning resource which will save time, money and efforts instead of using them as an entertainment tools [3][7].
- E. E-books and E-library are treated as the knowledge repository if utilized potentially.[7]
- F. Every technology has two facades, if used wisely then benefits are exponential but improper use has negative effects.

So it solely depends on how we use technology to meet educational goals and to empower society.

V. EDUCATION AND ENGINEERING PROCESS

Education can be considered as the systematic process similar to an engineering process which transforms raw material to finished product. Raw material is treated as an input and after passing through many phases shaped as the robust product. Similarly in the education system students are treated as raw material and are inexperienced acquiring knowledge and skill to build oneself. Thus students have to pass from many phases of study and come out as skilled and knowledgeable professional with responsible mature personality that will be beneficial to the society.

Simple engineering process involves following phases depicted in following diagram.

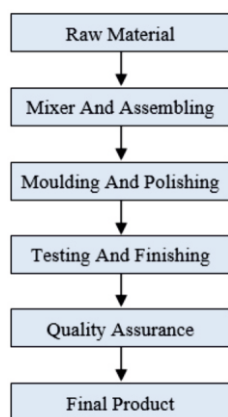


Figure : 1 Engineering process

Similarly educational process involves following phases.

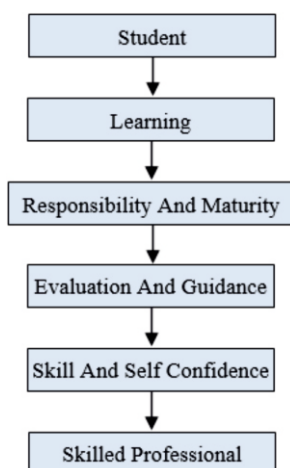


Figure : 2 Educational Process

Step by step comparison is listed in the following section.

- A. In engineering raw material is input and robust product is output passing through several processes. Similarly in education system novice student is treated as input raw material and responsible skilled professional as output passing through many phases of education.
- B. Mixer and assembly results in an entire new product same way learning will add knowledge and masters a student in a particular domain.

- C. Moulding and polishing will result in finalizing a product. Same way knowing responsibility and developing maturity makes a perfect student.
- D. Testing and finishing goods removes any pitfalls from a product. Evaluation and guidance will help clearing concepts and knowledge rectification.
- E. Quality assurance guarantees the product to meet the defined quality standards. Skill and confidence building guarantees the student to meet the necessary skill, domain knowledge and characteristics.
- F. At last finished final product is the outcome in engineering process same way skilled, knowledgeable, responsible, mature and professional personality is the outcome of educational system.

II. WISE USE OF TECHNOLOGY

Every technology has two facades. If it is used properly then it has valuable advantages in education but if too much use of the same technology in diverted area results in negative impacts. Following lists how a technology can be useful to gain knowledge.

- A. Latest tools and available technology should be adopted in learning.
- B. Social tools and applications should play a major role for knowledge sharing. Balance is required in usage of such tools.
- C. Internet is normally available to everyone and it can be utilized in research and development. Here also limited use is suggested because too much involvement has negative impact and makes it dependable.
- D. Novice research has more scope due to the easy availability of former research, possibility of practical implementation and adopting multi discipline approach.
- E. Interest is one of the major factor and technology helps learning fun and quickly which develops an interest to learner.

III. CONCLUSION

Change in technology and in any system is natural. The prime goal of education is to make students start thinking and be able to solve problem themselves. For this reason it must open the directions to achieve knowledge and build skills having the interest towards the study. Education can change whole the world if implemented by developing it to enjoy and learn with the feeling of burden less. Systematic usage of technology helps to achieve this.

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